Space Weather Forecast

Issued on Sunday, 24 October 2021 at 13:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Daily slight chance of Moderate-class X-ray flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity was very low through the past 24 hours. There were two sunspots on the facing side of the sun in the period: the first, a simple unipolar group near the solar meridian, with this spot stable and inactive. The second was larger and more complex, with some development observed. Up to two groups are emerging around the southeast limb, these will be analysed once they rotate further onto the visible disk. All observed Coronal Mass Ejections (CMEs) in available satellite imagery were peripheral - mostly from behind the eastern horizon of the sun - with none thought to have an Earth-directed component.

Solar Wind / Geomagnetic Activity: The solar wind remained at slow levels. The number of particles in the solar wind rose to just above average at times, while the magnetic field associated with these particles was unremarkable and stable throughout.
The net result of the preceding solar wind measures was provisionally quiet geomagnetic activity throughout, well below Minor Storm G1, and in fact near the very bottom of the measurement scale.
Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: There is a daily slight chance of Moderate-class X-ray flares, largely the result of the complexity of the larger of the current sunspots, although this has yet to be borne out in observed X-ray activity. There are possible returning sunspot regions now lying on the southeastern horizon of the sun, and perhaps just over the northeastern edge that may yet increase probabilities into the new working week, however these do not yet feature in the percentages.

Solar Wind / Geomagnetic Activity: No CMEs feature in this forecast period, and no 'coronal hole' high speed streams are expected to arrive. A quiet geomagnetic forecast is expected to be the result.

Energetic Particles / Solar Radiation: No solar radiation storms are currently expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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